

of *Neothauma* agrees in general structure with that of *Viviparus*. The tentacles certainly are very short and compressed, but that is merely of specific value.

The genus *Neothauma* was proposed on account of the aperture being somewhat effuse anteriorly and of the broad sinus in the outer lip, and at the time it was conjectured that these characters indicated some corresponding anatomical peculiarities. The right neck-lappet certainly is rather large, and doubtless the object of the labral sinus is to accommodate this siphonal structure. Beyond this there appears to be no reason for separating this form generically from *Viviparus*.

There is a species described by Prof. E. von Martens from China—"Paludina (*Melantho*) *auriculata*"—which feebly exhibits both an anterior effusion and a lateral emargination, and some of the specimens also have a peripheral angle like *Neothauma* (*vide* Novit. Conch. vol. iv. pl. cxxxv. figs. 4-6). "*Paludina angulata*, Lea," a North-American form now placed in the genus *Tylotoma*, has the aperture prolonged at the base, but the outer lip exhibits only a very slight trace of a median sinus. After careful consideration I now regard the extreme development of a labral sinus in *Neothauma* merely as a specific character, and not of generic importance. It will therefore pass into the synonymy of the genus *Viviparus*.

XLIII.—*Sessile-eyed Crustaceans.*

By the Rev. T. R. R. STEBBING, M.A.

[Plates XV. & XVI.]

A new Species of Talorchestia.

OF this widely distributed genus no European species appears to have been hitherto noticed. The name of the genus refers to its close connexion with the genera *Talitrus* and *Orchestia*, it being in a manner compounded of both, since the males of *Talorchestia* are *Orchestie*, while the females are *Talitri*. The distinction of the three genera can therefore only be regarded as conventional; yet it cannot well be relinquished, on account of the large number of species that have to be dealt with. It is attended by the special inconvenience that in this group animals of which only one sex is known cannot have their genus definitely determined. Thus "*Orchestia* (*Talitrus*) *pugettensis*," Dana, and "*Talorchestia? africana*," Sp. Bate, are still uncertain, both having been described from females only.

It may here be mentioned that *Talorchestia diemenensis*, Haswell, 1880, a Tasmanian species, ought to be referred to *Orchestia*, since both the figure and the description show that the first gnathopod in the female is not simple but subchelate, that is to say it has the precise character which separates *Orchestia* from *Talorchestia*.

The new species, *Talorchestia brito*, has the head truncate in front, the peraeon only moderately widened, the pleon narrow, with the hind corners of the third segment squared.

The eyes are large, irregularly rounded, and conspicuously white, with the black pigment more or less discernible beneath.

The Male.—The upper antennæ scarcely reach the end of the penultimate joint of the peduncle of the lower; the three joints of the peduncle are nearly equal in length, or the middle joint is slightly the longest; the flagellum of seven joints is less than half the length of the peduncle. In the lower antennæ the third joint has a lobed terminal margin; the fourth joint is not very much shorter than the long fifth joint; the flagellum has thirty or more stout but short articulations.

The first gnathopods: The side-plates are narrow, somewhat folded, directed forwards. The first free joint is narrow at the neck, with the front margin straight, the hinder convex; the fourth joint or wrist is not much shorter than the first, distally widened, near the distal end of the hind margin having a pellucid bubble-like process; as this projects among various spines, the impression produced at first sight was that of an actual bubble of water entangled among the spines. The hand is much shorter than the wrist, more spiny, and having a similar but shallower bubble-like process, which, by offering something for the finger to close against, renders it subchelate. The finger is short, with a small upright spine on the inner margin and a small rounded projection at the base of the nail.

The second gnathopods: The side-plates are large, rhomboidal, with a slight emargination at the upper part of the hind margin. The long first joint widens abruptly from the narrow neck, its width again diminishing towards the distal end; the oblong third joint is scarcely so long as the second; the fourth or wrist is quite insignificant in size and almost coalescent with the hand, which is of great length and breadth, an irregular oval, abruptly narrowed at the insertion of the long, powerful, and distally bent finger. The palm margin is fringed with numerous spines, its edge only microscopically crenulate; the closed finger hugs it closely, except

proximally, where there is a little gap left, and distally, where the point of the finger overlaps it.

The Female.—The upper antennæ are smaller than in the male, the middle joint of the peduncle not longer than either of the other two joints; the flagellum has five joints. In the lower antennæ the last joint of the peduncle is considerably longer than the preceding and is more strongly spined than in the male; the flagellum in the specimen examined had twenty-two joints.

The first gnathopods differ little from those of the male except in the complete absence of the pellucid processes on the wrist and hand, the latter being simple instead of subchelate; as in the male its hind margin is fringed with stout round-headed spines; the subterminal hair in these and many of the other spines on this limb is so thick that it produces the appearance of a cleft head to the spine.

The second gnathopods are in strong contrast to those of the male, being almost membranaceous. The first joint is narrow at the neck, thence widening out into an oval plate rather more than twice as long as it is broad; this serves as a protection for the delicate terminal joints, which, when not in use, are twisted round to lie upon it; the second and third joints are tolerably muscular; the wrist is rather inflated, almost transparent, widest near the distal end; the equally transparent hand is rather longer, with numerous spinules near the hind margin, the distal end rounded, projecting considerably beyond the minute triangular finger, which is inserted at the extremity of the straight front margin, and has its inner edge overlapped by a row of spinules on the hand.

Both Sexes.—The upper lip has the free margin finely furred, evenly rounded. The mandibles have the cutting-edge divided into five teeth, of which the terminal one is double; the inner plate has four teeth, in a single series on the left mandible, but on the right distinguished into two that are large and prominent and two that are small and insignificant; there are five plumose spines on the left and four on the right mandible; the molar tubercle is short and stout. The first maxillæ have the broad outer plate surmounted by nine spines, most of them denticulate; low down on its convex outer margin is the minute (so-called) palp, two-jointed; the inner plate is narrow, ending in two feathered setæ. The maxillipeds, as indeed the other mouth-organs, closely resemble those which have been described for *Talorchestia tumida*, Thomson, in the Trans. Zool. Soc. vol. xii. pt. vi., 1887.

The triturating organs of the stomach are fringed each with thirty spines.

The branchial vesicles are narrow and twisted. All the peraeopods are strongly spined. The first pair are considerably longer than the second and third, and considerably shorter than the fourth and fifth. The side-plates of the first and second are large and rhomboidal, of the third and fourth broad and bilobed, those of the fifth being semioval. In the first and second pairs the first joint is nearly parallel-sided; in the other three pairs it is oval, most regularly so in the fourth, being in the third much smaller and almost circular and in the fifth rather wider and a little more squared than in the fourth. In the first, fourth, and fifth pairs the finger has the inner margin nearly straight. In the second pair the finger is very short, abruptly narrowed on the inner margin halfway towards the nail; in the third pair it is equally short, rather stouter, with the inner margin less abruptly narrowed and the outer minutely furred. In all the pairs there is a setule near the base of the little nail on the inner margin, and on the outer a pair of microscopic processes of oval form.

The pleopods have long membranaceous peduncles, carrying two or three rows of small spines. The two coupling-spines are very short, single-toothed. The rami have fifteen or sixteen joints.

The first uropods have the peduncles longer than the slightly unequal strongly spined rami; the second have shorter peduncles, but slightly longer than the rami, of which the inner is a little the shorter. In the third pair the single ramus is much narrower, but not shorter than the peduncle.

The telson is broadest near the base, narrowest at the truncate end, on either side of which is a small group of spinules, another group being placed near the middle of the convex lateral margins.

The length of a good-sized male, not including the antennæ, is four fifths of an inch.

The colour is a very distinguishing character while the animal is alive. The ground-colour is yellowish white, here and there barred with deeper yellow, bordered along the side-plates and across the head with a beautiful purple, bands of which also sometimes extend across the back of the pleon. The appendages of the peræon and pleon and the telson are for the most part pellucid.

The specific name is chosen to mark the discovery of a representative of a genus now for the first time included in the fauna of Great Britain.

The species was obtained in abundance during the months of July and August of the present year (1891) on Woolacombe and Saunton Sands, in North Devon. It burrows in the sand after the fashion of *Talitrus locusta*, and occupies a zone of the shore immediately below that in which the *Talitri* are commonly found. Bright as its colouring is when observed near to the eye, upon the sand it is very easily lost sight of. By the lateral extension of the fourth peræopods it maintains an upright gait, although there is no dilatation of the middle joints in either the fourth peræopods or the fifth. When pursued its ingenuity in availing itself of the smallest shelter is considerable; its hoppings also are energetic, but they cease sooner than those of the *Talitri*, and the capture is consequently rather easier. It swims in an upright position, and when tired turns over, and so sinks gently to the bottom. In a finger-glass half full of sea-water several specimens lived in apparent content for four days. Some *Talitri* in similar circumstances did the same. At the end of that time they all sickened from a surfeit of boiled lobster supplied by way of experiment; and from want of time to attend to their possible recovery, euthanasia was administered through the medium of methylated spirit. On another occasion a large male *Talorchestia* was detected holding a young companion in its claw and feeding upon the still quivering little victim.

The following table may be useful as explaining the fine distinctions which separate four very closely related genera:—

	Gn. 1, ♂.	Gn. 2, ♂.	Gn. 1, ♀.	Gn. 2, ♀.
<i>Talitrus</i> , Latreille. . . .	Simple.	Feebly chelate.	Simple.	Feebly chelate
<i>Orchestia</i> , Leach . . .	Subchelate.	Strongly subchelate.	Subchelate.	Feebly chelate
<i>Talorchestia</i> , Dana . . .	Subchelate.	Strongly subchelate.	Simple.	Feebly chelate
<i>Orchestoidea</i> , Nicolet. . .	Simple.	Strongly subchelate.	Simple.	Feebly chelate

Thus in the male sex *Talorchestia* cannot be distinguished from *Orchestia*, and in the female neither *Talorchestia* nor *Orchestoidea* can be distinguished from *Talitrus*.

A new Species of Leptognathia.

Leptognathia Lilljeborgi, sp. n., appears to approach *Leptognathia longiremis* (Lilljeborg) more nearly than any other species of the genus, but at the same time to be very clearly distinguished from it by the antennæ, gnathopods, and uropods.

The body is very slender, more than eight times as long as broad, parallel-sided except at the two extremities. The

carapace, that is, the head with the first pereon-segment, is nearly twice as long as the greatest breadth; the front part is narrowed. The first free segment of the pereon is shorter than the rest, the next four being subequal, and the last only a little longer than the first. The fifth segment of the pleon is rather longer than any of the preceding four. The last segment is rather longer than the fourth and fifth together, and is obtusely rounded at the slightly narrowed extremity.

No eyes are perceptible. The upper antennæ (of the female) are shorter than the carapace; the first joint much longer than the next two together, the third a little longer than the second, the fourth quite rudimentary. The lower antennæ are much smaller than and implanted considerably behind the upper pair; the antepenultimate joint is much the longest and curved in lateral view.

The upper lip is dome-shaped. The mandibles have a finely serrate cutting-edge combined with a couple of teeth, which are stronger on the left than on the right mandible. The latter is shown in the figure interlocked between the two teeth of the left mandible. As they are seen from below the right mandible is on the left hand.

The first maxilla consists of a long narrow lobe, curved at the extremity, where it carries five setæ, with a setule on the outer margin a little below the apex; the exopod was not observed, but was doubtless of the usual form.

The maxillipeds have four strong setæ on the terminal joint and two smaller ones on the inner margin of the long penultimate joint. The central plate appeared to be undivided, but was not clearly observed.

The first gnathopods have the first free joint massive, larger than any of the others, widest near the base, as wide as long; the second joint is absent or coalesced; the third is small and triangular, carrying a single setule; the wrist is more than once and a half as long as broad; the hand proximally is fully as broad as the wrist, the outer margin very convex, its apex projecting much beyond the base of the finger, and there set with several tubercles; on the inner side it makes an abrupt bend at a very short distance from the wrist, forming a broad thumb ending in a nail-like process, and carrying two setæ on the inner margin and three or four together with some flattened tubercles on the border facing the finger. The finger is irregularly tubercled on the outer margin and smooth on the inner, its tip closing within the unguicular process of the hand.

The second gnathopods have the first free joint long, slender, and bent; the third, fourth, and fifth joints are sub-

equal, together longer than the first; the finger is about two thirds as long as the fifth joint, the slender nail being longer than the base.

The first and second peræopods have the joints shorter and less slender, the first not curved. The hand has a serrate spine on the inner margin near the finger, the preceding joint having a similar spine on the outer apex and a longer spine on the inner. In the last three pairs of peræopods the first joint is a little more dilated, the hand has serrate margins, and there is a group of serrate spines at the apex both of this and of the preceding joint; the finger has a minute instead of an elongate nail.

The marsupium is composed of eight plates.

All five pairs of pleopods are well developed in the female, each of the oval rami carrying about thirteen setæ, which did not appear to be plumose.

The uropods have the peduncle about twice as long as broad. The inner ramus consists of two long joints, the first a little longer than the peduncle and the second a little longer than the first; the first carries three setæ at the apex, the second five or six, and one on the inner margin a little way above the apex. The outer ramus is narrow, equal in length to the peduncle, the first joint having an apical seta on the outer margin, the second, which is slightly shorter, having two setæ on the apex.

The length of the animal is about one tenth of an inch.

Three or four specimens were obtained in August 1890 in the sands at Lee and Woolacombe, North Devon. The species is named in compliment to Professor Lilljeborg, who published an important work on the Tanaidæ in 1864.

The species *Leptognathia laticaudata*, G. O. Sars, was taken in June this year in the Clyde at Kames Bay, while I was dredging in company with Mr. David Robertson, F.L.S. This species is, it seems, new to the fauna of Great Britain.

EXPLANATION OF THE PLATES.

PLATE XV.

Talorchestia brito, sp. n. *gn.* 1, ♂, first gnathopod of male; *gn.* 2, ♂, second gnathopod of male; *gn.* 1, ♀, first gnathopod of female; *gn.* 2, ♀, second gnathopod of female; *prps.* 1, 2, 3, 4, last two joints of the first, second, third, and fourth peræopods respectively; *w.* 3, third uropod; *τ*, telson.

PLATE XVI.

Leptognathia Lilljeborgi, sp. n. Dorsal view of the animal, the natural size indicated by the line above. *a. s.*, upper antenna, three terminal joints; *a. l.*, lower antenna; *l. s.*, upper lip; *m. m.*, parts

of the mandibles; *mx.* 1, part of first maxilla; *mcp.*, maxillipeds; *gn.* 1, first gnathopod, omitting the large basal joint; *gn.* 1, B, first gnathopod from another specimen, finger and part of hand; *gn.* 2, second gnathopod; *pp.* 5, fifth pereopod; *plp.* 4, fourth pleopod; *ur.*, uropod; *τ*, telson.

MISCELLANEOUS.

Note on Parmacellus gracilis, Gray.

In 1855 (Cat. Pulm. Brit. Mus. part 1, p. 64) there appeared the description of a slug under the name of *Parmacellus gracilis*. This species, which was based on a specimen purchased with the label "*Parmacella Olivieri*," in the collection of the British Museum, has never since been recognized. The locality was unknown.

Last year, while examining the slugs in the British Museum, I found a specimen of *Ibycus fissidens* (= *sikkimensis*) with the label "*Parmacella*. 43. 3. 31. 33," which was entered in the accession-book as "*Parmacella Olivieri*, purchased at Stevens'." I described this slug in *Ann. & Mag. Nat. Hist.*, Jan. 1891, p. 106, as *I. sikkimensis*, = *fissidens*; but it never occurred to me at the time that it was the original of *Parmacellus gracilis*. Having now compared my notes with the original description, it is evident that these are the same thing. The history of the specimen, with its label, together with the general agreement of the described characters, is convincing.

The synonymy will accordingly stand:—

- Ibycus gracilis* (Gray, 1855).
 = *I. fissidens* (Heyn., 1862).
 = *I. sikkimensis* (G.-Aust.).

T. D. A. COCKERELL.

Institute of Jamaica, Kingston, Jamaica,
 August 18, 1891.

On the Development of Sponges (Spongilla fluviatilis).

By M. YVES DELAGE.

1. *Formation of the Ectoderm.*—M. Goette, of Strasbourg, in his work on the development of the Freshwater Sponge, states that the larval ectoderm is thrown off, and that the permanent external membrane is formed by the superficial layer of the internal mesodermic mass. All previous authors, on the contrary, affirm with Ganin that the larval ectoderm is transformed into the permanent one, and recently this view has been re-established by M. Maas, of Berlin, who describes in detail the phenomena of the transformation.

I showed last year* that in *Esperella*, a genus of siliceous marine sponges, there exist among the ciliated cells of the larval ectoderm large non-ciliated cells, which pass to the surface after the larva becomes fixed, and form the permanent ecto-

* 'Comptes Rendus,' séance of March 24, 1890.